CONCUSSIONS: WHAT YOU NEED TO KNOW!

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Who We Are: Safe Kids Oregon works to prevent unintentional childhood injury, the leading killer of children ages 14 and under. Safe Kids Oregon, founded in 1995, is a member of Safe Kids Worldwide. Safe Kids Oregon is lead by the Oregon Public Health Division, Office of Prevention and Health Promotion. We facilitate, support and advance child injury prevention efforts working with nine collations and three chapters in Oregon.

Mission: Working Together to Reduce Unintentional Injuries In Oregon’s Children Ages 0 – 14.

Safe Kids Oregon is part of the Oregon Health Authority Center for Prevention and Health Promotion Injury Prevention Program

www.safekidsoregon.org


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BASIC CONCUSSION INFORMATION

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Who We Are: ThinkFirst Oregon is a Brain and Spinal Cord Injury Prevention Program. Located at Oregon Health & Science University, ThinkFirst participates in injury prevention programs and community events throughout the state of Oregon.

Mission: The OHSU ThinkFirst Oregon Mission is to reduce the incidence of brain, spinal cord, and other traumatic injuries and fatalities by providing education to youth, parents, and community members throughout Oregon.

ThinkFirst Oregon is a chapter of ThinkFirst National Injury Prevention Foundation. [http://www.thinkfirst.org/home.asp](http://www.thinkfirst.org/home.asp)

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A concussion is a traumatic brain injury.  
TRUE

A concussion is a bruise on the brain.  
FALSE

Concussions can occur in any organized or unorganized recreational sport or activity.  
TRUE

Concussions can be caused by a fall, bump, or blow to the head or body.  
TRUE

Concussions only happen if a person has been knocked out or lost consciousness.  
FALSE

Concussion symptoms may take up to a week, a month or event longer to show up.  
TRUE

To have a concussion you only need to exhibit one symptom.  
True
A concussion is a traumatic brain injury

All concussions should be taken seriously

Head injuries are often not physically obvious and are often misdiagnosed

Concussion symptoms may not appear weeks or months after the injury occurred

Recognition and proper response to concussions when they first occur can help prevent further injury or even death
MILD TRAUMATIC BRAIN INJURY

- A Traumatic Brain Injury (TBI) is a blow or jolt to the head or penetrating brain injury that disrupts the normal function of the brain (CDC)
- TBI Severity ranges from mild to severe
- A concussion is classified as a “Mild” Traumatic Brain Injury but can be serious
- The majority of TBIs are concussions

http://www.cdc.gov/traumaticbraininjury/
CAUSES OF TRAUMATIC BRAIN INJURY IN THE U.S.

DATA SOURCE: U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, 2010

- Motor Vehicle Crashes: 17%
- Falls: 35%
- Struck By or Against: 17%
- Other/Unknown: 21%
- Assault: 10%
- Other/Unknown: 21%
CAUSES OF TBI IN CHILDREN AGES 0-14

- 50% Falls
- 25% Struck by or hit against an object
- 17% Motor Vehicle Crashes-Traffic Crashes
- 3% Assault
- 5% Other

www.cdc.gov/traumaticbraininjury/causes.html
A concussion is a type of Traumatic Brain Injury (TBI) caused by a bump, blow, or jolt to the head or by a hit to the body that causes the head and brain to move rapidly back and forth.

A concussion is a disruption to the normal functioning of the brain. It changes the way your brain normally functions. It is not a “bruise to the brain.”

Because it is a disruption of how the brain works (functional) brain CAT scans and MRIs results are normal with most concussions.

HOW CONCUSSIONS OCCUR

- Brain is soft organ surrounded by spinal fluid
- Brain is protected by skull
- Fluid cushions the brain and keeps it from crashing into skull
- When head or body is hit hard the brain can crash into the skull— injury results
**Mechanism of Closed Head Injury**

Deceleration  

Head thrown backward while brain hits front of skull

Acceleration  

Head thrown forward while brain hits back of skull

http://braininjury.blogs.com/content/lawvermustknow/index.html
A concussion is typically caused by a severe head trauma during which the brain moves violently within the skull

- Brain cells all fire at once, much like a seizure
- Some studies show that patients who suffer a concussion appear to have the brain activity of people in a coma

A concussion can be structural

- A study at the University of Illinois at Chicago College of Medicine found structural changes in the white matter of the brains of patients with head injuries
- Structural changes correlated to cognitive deficits in thinking, memory and attention

http://sportsmedicine.about.com/cs/head/a/concussion.htm
White Matter & Gray Matter

- Concussions may be hard to diagnose without specialized equipment because concussions often take place deep inside the white matter of the brain.

- **Gray matter**
  - The brain’s gray matter is made up of neurons, which gather and transmit signals.

- **White matter**
  - The white matter is made up of dendrites and axons, which create the network by which neurons send their signals.

COMMON WAYS TO GET CONCUSSIONS

- Falling
- Getting hit in the head
- Playground injuries
- Car crashes
- Bike crashes
- Sports Injury
COMMON CONCUSSION SYMPTOMS
4 Concussion Symptom Areas

- Thinking and Remembering
- Physical
- Emotional and Mood
- Sleep
THINKING OR REMEMBERING CONCUSSION SYMPTOMS

- Difficulty thinking clearly
- Feeling slowed down
- Difficulty Concentrating
- Difficulty remembering new information
PHYSICAL CONCUSSION SYMPTOMS

- Headache
- Fuzzy or blurry vision
- Nausea or vomiting (early on)
- Dizziness
- Sensitivity to light or noise
- Balance problems
- Feeling tired, having no energy
EMOTIONAL OR MOOD CONCUSSION SYMPTOMS

- Irritability
- Sadness or Depression
- More emotional than usual
- Nervousness
- Increased anxiety
Sleep related concussion symptoms:

- Trouble falling asleep
- Sleeping more than usual
- Sleeping less than usual
- Difficulty remembering new information
Concussion Symptoms

- Concentration and memory complaints
- Irritability and other personality changes
- Sensitivity to light and noise
- Sleep disturbances
- Psychological adjustment problems and depression
- Disorders of taste and smell
SYMPTOMS IN YOUNG CHILDREN

- Crying more than usual
- Headache that does not go away
- Changes in behavior or play
- Sleeping or eating changes
- Temper tantrums
- A sad mood
- Lack of interest in usual activities or favorite toys
- Loss of balance or trouble walking
- Difficulty paying attention

CONCUSSION DANGER SIGNS

Experienced by person who received concussion:

- Weakness, numbness or decrease coordination
- Repeated vomiting or nausea
- Slurred speech
- Headache worsens or does not go away
Concussion Danger Signs

Observations by others:
- One pupil larger than the other
- Convulsions or seizures
- Unusual behavior
- Unable to recognize people or places
- Increased confusion, restlessness, or agitation
- Loss of consciousness
If concussion danger signs are observed or are experienced, go to the emergency department immediately.
Recovery from Concussions CHILDREN

- Have the child or teen get plenty of rest
- Avoid high-risk or high-speed activities such as riding a bicycle, playing sports, or climbing playground equipment
- Talk with their health care professional about when the child should return to school
- Understand a child or teen may need to spend fewer hours at school, rest often, or require more time to take tests
- Share information about concussion with parents, siblings, teachers, counselors, babysitters, and coaches

http://www.cdc.gov/concussion/feel_better.html
Recovery from Concussions

- Get plenty of sleep at night and rest during the day
- Avoid physically demanding activities like sports
- Avoid activities that require a lot of concentration
- Avoid sustained computer use or playing video
- Return to normal activities gradually under medical supervision
- Consult with family members or close friends when making important decisions
WHAT YOU CAN DO
RAISE AWARENESS

- Know the signs for concussion
- Raise awareness in your organization, community, or school
- Educate kids and teens to take hits to the head seriously
- Wear safety helmets
- Provide CDC concussion kits to your coach or school
- Provide concussion training to parents and kids
Free online training is offered on the CDC website. Heads Up Online Concussion Training Course is great training for nurses, doctors, teachers, coaches, parents, and even teens.

Heads up for Coaches:

http://www.cdc.gov/concussion/HeadsUp/online_training.html

Heads up for Clinicians:

http://www.cdc.gov/concussion/headsup/clinicians.html
SPORTS CONCUSSIONS

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SIGNIFICANT PROBLEM

- More than 50 percent of concussions occurring at the adolescent and high-school level are not recognized or diagnosed.
- Long term effects of concussion are not understood or are misunderstood.
- Parents, athletes, coaches often need education or training to understand concussions.
In 2001 Max Conradt, 17 years old, sustained a concussion during a high school football game. With no medical confirmation he started the next game. He collapsed during the game due to a bleeding on the brain. Was in a coma for three months. Received three brain surgeries. Now has a permanent brain injury. Injury inspired Max’s Law Implementation Guide.

http://ocamp.org/maxs-law-oars/

OAR 581-022-0421
Max’s law (OAR 581-022-0421) requires Oregon school districts to:

- Implement new concussion management guidelines for student athletes in 2010–2011
- Successful concussion management policies follow the Recognize, Remove, Refer, Return protocol
Max’s Law

- **RECOGNIZE**: All coaches must receive annual training in recognizing the symptoms of concussion.

- **REMOVE**: Students suspected of sustaining or having a concussion must be removed from play.

- **REFER**: A concussion must be evaluated by a properly trained medical professional.

- **RETURN**: A student may return to play when all symptoms have resolved, at least one day has elapsed since the injury, and a medical release has been obtained.

Best Practice

- Train all school staff, student athletes, and parents in concussion management
- Extend training beyond coaching staff
- Develop clear district-wide policy
- Return student athletes to full activity using an individualized graduated plan

http://www.ode.state.or.us/teachlearn/subjects/pe/ocampguide.pdf
DESIGN AND IMPLEMENTATION OF A CONCUSSION MANAGEMENT PLAN

- Determine at risk groups
- Educate those involved
- Locate and contact community resources
- Create a Concussion Management Team
- Design a protocol that fits your community
CONCUSSION MANAGEMENT
TEAM MEMBERS

- Athletes/Patients
- Parents
- Coaches
- Administrators
- Teachers
- Medical Providers
CONCUSSION MANAGEMENT COMMUNITY RESOURCES

- Physicians
- School Nurses
- Academic Counselors
- Athletic Trainers
- Physical Therapists
- Neuropsychologists
- School Psychologists
Concussion Management Protocol

- Recognize
- Remove
- Refer
- Return
RECOGNIZE
Baseline Testing

- Balance Error Scoring System (BESS)
- ImPACT Testing
- Neurocognitive online testing services
- Videotaping athletes to understand their baseline

www.impacttest.com
SIGNS OBSERVED BY COACHING STAFF

Staff observes athlete:

- Appearing dazed or stunned
- Acting confused about assignment or position
- Forgetting an instruction
- Indicating confusion about game, score, or opponent
- Moving clumsily
- Answering questions slowly
- Losing consciousness *even briefly*
- Showing mood, behavior, or personality changes
- Failing to recall events *prior* to hit or fall
- Failing to recall events *after* hit or fall

http://www.cdc.gov/concussion/sports/recognize.html
REPORTED SYMPTOMS

Athletes Reported

- Headache or “pressure” in head
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light
- Sensitivity to noise
- Feeling sluggish, hazy, foggy, or groggy
- Concentration or memory problems
- Confusion
- Not “feeling right” or is “feeling down”

http://www.cdc.gov/concussion/sports/recognize.html
If concussion is suspected, athlete should be immediately removed from activity.

Immediately following concussion: **Total physical and cognitive rest**
Refer athlete for medical evaluation
Send to emergency department if needed
Contact parents for follow up after the injury
Begin exercise progression when asymptomatic **AND** cleared by medical provider
Graduated Return to Exercise and Sport Progression

- Level 1: Light Cardiovascular Exercise
- Level 2: Strenuous Cardiovascular Exercise
- Level 3: Sport Specific Exercise with NO CONTACT
- Level 4: Full Contact Practice
- Level 5: Return to Unrestricted Practice and Competition
GRADUATED RETURN TO EXERCISE AND SPORT PROGRESSION

- Progress one step per 24 hours*
- Only progress if symptom free
- If symptoms recur, rest for 24 hours and restart progression at Level 1
Best Practice
Inform and Educate About Concussions

- Coaches
- Athletes
- Parents of Athletes
- School Staff
- A signed medical release before athlete can be cleared to play
- Baseline testing
- Athlete be symptom free before return to play
WHAT YOU CAN DO
Free online training is offered on the CDC website
Heads Up Online Concussion Training Course

Great training for nurses, doctors, teachers, coaches, parents, and even teens

Heads up for Coaches:
http://www.cdc.gov/concussion/HeadsUp/online_training.html

Heads up for Clinicians:
http://www.cdc.gov/concussion/headsup/clinicians.html
CONCUSSION MANAGEMENT FORMS

- OSAA Return to Participation Release

- OCAMP Symptom Checklist
  - [http://ocamp.org/media/dynamic/medialibrary/2011/02/Symptom_CHECKLIST.pdf](http://ocamp.org/media/dynamic/medialibrary/2011/02/Symptom_CHECKLIST.pdf)
CONCUSSION MANAGEMENT RESOURCES

OHSU SPORTS MEDICINE CONCUSSION MANAGEMENT
http://www.ohsusportsmedicine.com/p/concussion-management.html

CDC
http://www.cdc.gov

OCAMP Concussion Management
http://ocamp.org/

NIH Video clip on Concussion
Questions?